

Abstract Submitted  
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**Monodisperse Block Copolymer Particles with Controllable Size, Shape, and Nanostructure.** JAE MAN SHIN, Department of Chemical and Biomolecular Engineering, KAIST, YONGJOO KIM, Department of Material Science and Engineering, KAIST, BUMJOON KIM, Department of Chemical and Biomolecular Engineering, KAIST, PNEL TEAM — Shape-anisotropic particles are important class of novel colloidal building block for their functionality is more strongly governed by their shape, size and nanostructure compared to conventional spherical particles. Recently, facile strategy for producing non-spherical polymeric particles by interfacial engineering received significant attention. However, achieving uniform size distribution of particles together with controlled shape and nanostructure has not been achieved. Here, we introduce versatile system for producing monodisperse BCP particles with controlled size, shape and morphology. Polystyrene-*b*-polybutadiene (PS-*b*-PB) self-assembled to either onion-like or striped ellipsoid particle, where final structure is governed by amount of adsorbed sodium dodecyl sulfate (SDS) surfactant at the particle/surrounding interface. Further control of molecular weight and particle size enabled fine-tuning of aspect ratio of ellipsoid particle. Underlying physics of free energy for morphology formation and entropic penalty associated with bending BCP chains strongly affects particle structure and specification.

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